**From:** Gorin.Jonathan@epamail.epa.gov
**To:** McGowan, Carrie; John M. Hoffman
**Subject:** FS comments
**Date:** Thursday, February 07, 2013 5:10:35 PM
**Attachments:** DRAFTcomments inc DEP CLEAN.docx

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To: "McGowan, Carrie" <CMcGowan@ashland.com>, "John M. Hoffman" <jmhoffman@ashland.com>

Hi John and Carrie, apparently the meeting with DEP went well.

The final FS comment letter is awaiting my branch chief's signature. I'm not sure she'll get to it tonight, and i'm not in the office tomorrow, so i figured i'd e-mail you the comments now.

None of these should be a surprise, nor do i believe they will be difficult to address. If Gary has questions, or wants to check on a response before making a revision, that's fine of course.

Also, the draft revisions Cornerstone has already sent me (e.g., New Section 2.6, revised 2.3 etc) are acceptable except for the following, which again shouldn't be a surprise:

> COPCs: The list of COPCs does not include all COPCs carried through the HHRA (RAGS Part D, Table 10s). Please ensure that ALL identified COPCs from the risk assessments are included as COPCs in the FS. Additionally, arsenic in sediment also posed an unacceptable human health risk.

I'll try to get you the final RI comments next week, followed by the Off Site Ditch approval letter.

Jon

ps, any word on that fiberglass tank?

> *(See attached file: DRAFTcomments inc DEP CLEAN.docx)*

ATTACHMENT

General comments:

- Need to develop PRGs (including for stream sediments based on the BERA (see next bullet)). These would typically be developed in Section 4, after the ARARs section.

- Pursuant to N.J.A.C.7:26E-4.8, numerical ecological risk-based preliminary remediation goals (PRGs) must be developed for sediment and low marsh soil to serve as target concentrations for the remediation and to provide volume estimations for contaminated media. PRGs should be developed for contaminants that the Baseline Ecological Risk Assessment (BERA) identified as posing unacceptable food chain or direct exposure risk. For each contaminant where dietary exposure models indicated a hazard quotient (HQ) >1, PRGs should be determined via back-calculation using the food chain models. For elevated levels of non-biomagnifying contaminants (i.e. arsenic, barium, zinc and other inorganics), where a complete set of sediment toxicity test data could not be acquired due to laboratory refusal of samples, PRGs still need to be determined. ( Note: Barium data were not reported in FS Appendix A Tables, yet the draft BERA indicated highly elevated barium sediment concentrations (e.g., numerous data points approximately three orders of magnitude above the sediment ER-M of 48 mg/kg).)

  Pursuant to the NJDEP Ecological Evaluation Technical Guidance, August 2011, (*NJDEP August 2011*), if the PRGs cannot be achieved, the FS must identify risk management decision (RMD) goals.

- Need to clearly identify COCs
- Arsenic should be considered a site contaminant.
- Need to discuss wetland replacement to replace the areas along SBC that will be filled.
- Need to better define the cap, e.g., impermeability, etc. Will it comply with NJDEP tech regs?
- Need to indentify elemental, visible mercury as a Principal Threat Waste (PTW).
- Need to make it more clear that both site and non-site related (i.e. fill) wastes will be addressed by the alternatives due to the co-location.
- Need a complete explanation of Ground Water Quality Criteria for Class III-B areas:
  "The ground water quality criteria for Class III-B shall be determined on an area by area basis in response to case by case needs, in the context of applicable regulatory programs. In each case, the criteria shall be no more stringent than necessary to ensure that there will be no:
  1. impairment of existing uses of ground water;
  2. resulting violation of Surface Water Quality Standards;
  3. release of pollutants to the ground surface, structures or air in concentrations that pose a threat to human health;
  4. violation of constituent standards for downgradient classification areas to which there is a significant potential for migration of ground water pollutants."

Specific comments (many need to be fixed throughout document):

1) Table ES-1. Remedy 5b should be" Full Containment and **Full** Depth…. "

2) Page ES -2. Last paragraph, last sentence. Revise it to read "The anthropogenic fill found on the LCP Site and vicinity has been mapped as 'Historic Fill' by the NJDEP."
3) ES-3 first bullet. Place "(e.g., mercury)" between the words "contaminant," and "due"
4) ES-3 Second bullet. Remove the phrase "…in particular visible mercury…"
5) ES-3 Fourth bullet. Remove the word "visible."
6) ES-3 last bullet. Please remove the words "(naturally occurring)" and change the word "criteria" to "standard."
7) ES-10 add a bullet for "State Acceptance" after "Cost."
8) ES-10 first paragraph. Remove the word "and State" and modify the rest of the sentence into singular.
9) ES-10 Remove the third bullet under "Protection of Human Health and the Environment" (i.e., the one that starts with "The only facility…").
10) ES-11, second bullet, please define LDR.
11) ES-11, second bullet under "Compliance with ARARs" should be revised to read. "Site Remedy Nos. 5a and 5b assumes waste will be shipped to the Stablex facility in Canada, therefore it would not violate LDRs for mercury as the regulations only apply within the United States. The Stablex process of S/S treatment and landfill disposal would not be permissible at a US facility without a variance to LDR requirements. " Also, please spell out Land Disposal Restrictions at least once.
12) ES-12 last bullet, please remove everything starting with and after the phrase "The only disposal option…."
13) ES-12 – The evaluation criterion specifies the reduction of T,M or V only through treatment, not containment. Containment would also reduce mobility.
14) Page ES-13, Short-Term Effectiveness, 2nd bullet: In the last sentence of this bullet, should "incremental" be "elemental"?
15) ES-14 please remove the last sentence under Cost. I.e., the one starting with "While these latter…"
16) Page 1-2, 4th bullet. Please add this sentence. "The technical memorandum effectively screened out all treatment and removal based alternatives, leaving only one action alternative (capping) for the soil remedy."
17) Page 1-3, 5th bullet. Modify to: "Meeting with USEPA in January 2010 to discuss the August 2009 tech. memo at which EPA indicated that in order for all treatment technologies to be screened out, treatability studies would need to be performed to demonstrate impracticability. In accordance with Section….. IES agreed to prepare a treatability work plan."
18) Page 1-4, second paragraph last sentence. Please remove "…meets the definition of 'Historic Fill' contained in the New Jersey 'Technical Requirements for Site Remediation' (NJAC 7:26E-1.8) and…"

19) Page 2-5, In Section 2.3.1, Nature and Extent of Contamination – Soils --- The FS should include a description of the free product identified in the soil borings. The Site Characterization Summary Report noted the presence of free product in Appendix A (under the column "Free Liquids - Organics").

20) Page 2-6, 2nd paragraph and page 2-22, 1st full sentence: Arsenic at the site does not appear to be homogenous, as suggested. According to figures 6-2a and 6-2b, arsenic is concentrated around the northeast corner of the Linde Lease Hold Hydrogen Plant. Additionally, there does appear to be an otherwise decreasing gradient with depth. The data indicate that arsenic is could be site-related, although EPA recognizes that some arsenic may be a result of the anthropogenic fill.

21) Page 2-10. First paragraph, remove all the text starting with the word "However,…" from the previous page.

22) Page 2-10. The phase "…Surface Water Quality Criteria" should be "New Jersey Surface Water Quality Standards."

23) Page 2-10 third paragraph, third sentence. Please delete the sentence that begins with "of the constituents that are representative…."

24) Page 2-11 first full paragraph, second to last sentence. Please revise to read "These constituents are most likely associated with the fill. "

25) Page 2-13, third paragraph, second sentence revise to read: "These data, along with published information, were then used as a point of comparison."

26) (p. 2-13) 2*.3.4 Sediment; Appendix A – Table 6-18a; and Figure 2-12* - As per N.J.A.C. 7:26E-1.16 and *NJDEP August 2011*, low marsh soil data must be compared to sediment and/or soil ecological screening criteria (ESC) at http://www.nj.gov/dep/srp/guidance/ecoscreening. It is inappropriate to compare data from an environmentally sensitive natural resource, such as this wetland/wetland buffer zone, to the human health-based Non Residential Direct Contact Soil Remediation Standards (NRDCSRS). The text, table and figure referenced above should also be revised.

27) Page 2-14, 1st paragraph, 1st sentence, "Arsenic concentrations in sediment and low marsh soil are elevated in the up-gradient area, but the elevated levels relative to those detected on site indicate that arsenic is present due to non-site sources (historic drainage along the railroad tracks from other sites)." According to Figure 6-2c, the elevated arsenic concentrations in tidal marsh deposits in the up-gradient portion of South Branch Creek are over 100 feet from the railroad tracks. As a result, it is unlikely that the arsenic in this area is a result of drainage from other sites along the railroad tracks. Additionally, we would expect to see similar arsenic contamination in other areas along the railroad tracks, which we do not. Samples collected in closer proximity to the tracks are mostly below the state background level for soils. Further, similar levels of arsenic were encountered near the northeast corner of the Linde Lease

Hold Hydrogen Plant. Finally, biota samples which were speciated for arsenic indicate that more inorganic forms were present in the upgradient portion of South Branch Creek (transect A) and are likely site-related as opposed to samples collected closer to the Arthur Kill (more organic) which are likely more representative of regional background arsenic contamination. Arsenic should not be ruled out as a potential site contaminant.

28) (p. 2-14) *2.3.4 Sediment* – The text states "Mercury concentrations within South Branch Creek attenuate with distance from the site and are comparable to regional Arthur Kill background by the confluence with the Arthur Kill." This statement should be removed .

    It is not clear whether the draft FS is suggesting that data from Transects F and G, proximal to the confluence of South Branch Creek and the Arthur Kill, represent "regional background" levels. The FS must consider data from these transects as site-related and not representative of regional background levels.

29) Page 2-15, Section 2.3.6: "Arsenic concentrations in tissue samples correlated with the location of elevated arsenic concentrations in sediment, and the tissue data for arsenic also indicated an unrelated off-site source other than the LCP Site (e.g., the unique form of arsenic found in a tissue sample upon speciation)." EPA interprets this data differently. It would appear that the elevated arsenic in tidal marsh soils correlates with the elevated arsenic in biota. The species of arsenic (more inorganic) in the biota of the up-gradient portion of South Branch Creek are different than the species (more organic) found close to the Arthur Kill. This suggests that the elevated arsenic concentrations are a result of site-related activities and the lower concentrations, nearer to the Arthur Kill are representative of regional background.
30) Page 2-15, second 2.4. This is the first mention of COCs. Somewhere here or previous the COS should be listed.
31) Page 2-17, 4th bullet, last sentence: "Arsenic, mercury, benzene, p-chloroaniline, and various metals were the primary contributors to the potential excess risk." According to Table 10.3 RME in the Draft HHRA, the contaminants driving risk under the groundwater scenario are manganese, furan and p-choroaniline. Please rectify this discrepancy.
32) Page 2-17, 6th bullet: Concentrations of lead in soil may cause adverse health effects to construction workers exposed to a mix of surface and subsurface soils, according to Page 6-6 of the Draft HHRA.

33) Page 2-20, second paragraph. As mentioned previously, Class IIIB groundwater isn't regulated solely on impacts to surface water. This needs to be clarified, and text needs to be placed here and elsewhere discussing if the water meetings all Class IIIB regulations.
34) Page 2-21, 1st full sentence: "Given the minimal ongoing stormwater discharge to South Branch Creek and the evidence that groundwater is a negligible source of mercury to surface water, the transport of mercury to South Branch Creek can be considered historic." I'm not sure this has been proven or even substantially supported by data, please delete.
35) Page 2-21, 2nd paragraph: "PCBs were generally low in South Branch Creek…" Please define "low". Were they below screening criteria? If so, which screening criteria?
36) Page 2-21. In the third paragraph, give the range of PCB concentrations in the SBC sediments.
37) Page 2-22 – 1st bullet "containment" should be "contaminant."
38) Page 2-25, second bullet. Explain what is meant by "surface volume."
39) Page 3-1 please rewrite the first paragraphs to contain the information below (or use it verbatim) and removed the subsequent 4 bullets.

    *RAOs are media-specific goals to protect human health and the environment. Remedial alternatives are developed to meet the RAOs. The process of identifying the RAOs follows the identification of affected media and contaminant characteristics; evaluation of exposure pathways, contaminant migration pathways and exposure limits to receptors; and the evaluation of contaminant concentrations that would result in unacceptable exposure. The RAOs are based on regulatory requirements and risk based evaluations, which may apply to the various remedial activities being considered for the site. This section of the FS reviews the affected media and contaminants that are required to be remediated and identifies federal, State and local regulations that may affect remedial actions.*
    *PRGs were selected based on federal or State promulgated ARARs and risk based levels, with consideration also giving to background concentrations and other guidelines. These PRGs were used as a benchmark in the technology screening, alternative development and screening, and detailed evaluation of alternatives presented in the subsequent sections of this FS report.*

40) Page 3-1 In place of the first four bullets, please make a section called "identification of RAOS" in that section discuss all site related contaminants, media they were found it, relevant risk levels and which constituents the alternatives were focused on remediating (e.g., mercury). The section should be only a couple of paragraphs and should include the paragraph on 3-1 that begins with "Based on the above…" as well as the subsequent 4 bullets.
41) Page 3-2, please delete the paragraph beginning with "When assessing…." as well as the subsequent 3 bullets
42) Page 5-2: Please include monomethyl mercury in the table of solubilities.
43) Page 5-9. Third bullet, remove sentence referencing Brookhaven Lab.

44) Page 6-3. First paragraph, last sentence. I believe the discount rate is 7%, please confirm.

45) Page 6-4, Section 6.1.2, Alternative No. 2S, discusses the conceptual capping system, however there is little detail about the proposed cap. The first paragraph notes that "for the purpose of evaluating this alternative, a soil cap, including 24 inches of certified clean fill, along with geosynthetic membrane and drainage components, has been assumed since it would be representative of the various capping options." Section 6.1.7, Alternative 6S, discusses the treatment component of the conceptual cap. The concept behind the treatment component of the cap is that elemental mercury could react with a sulfur-based compound, resulting in the formation of cinnabar (i.e., mercuric sulfide) to some degree, dependent on a variety of conditions. The FS proposes that by including a sulfur-based component in the soil cap, some treatment of mercury vapor could result, and would further limit mercury vapor pathway and the potential for mercury vapor buildup below the cap. While the FS notes that pilot studies would be necessary for soil treatment and stabilization, there is no mention of the need for pilot studies for the Treatment Cap. If the Treatment Cap is selected, then a treatability or pilot study will be necessary. Also, any other available case studies using this technology should be provided in the FS.

46) Page 6-27, 1st paragraph: "Upgradient of the Arthur Kill, the distribution of groundwater quality impacts is indicative of impacts associated with the adjacent LPH site and is not associated with LCP." Please temper a bit, perhaps replace the "is" after the word "and" with the phrase "…and does not appear to be associated…."

47) Pages 6-41 and 6-43; the discussions on eliminating S/S. EPA feels solidification could work if the correct solidification agents were selected in a pilot study. EPA feels this should be retained.

48) Page 6-43 – Title of 6.7.4 should be Alt 9S-1 and 9S-2 for soil washing.

49) (p. 7-6) 1st bullet – The FS proposes to excavate sediments to 2.5 feet deep in the lower portion of South Branch Creek, 1 foot in the low marsh soils, and 2.2 feet in the Northern Offsite Ditch. The basis for these depths and the lateral extent in wetland soil is not stated and it is unclear whether contamination extends beyond these limits, e.g., vertically into the bed material. Pursuant to N.J.A.C. 7:26-4.1, contaminants must be delineated to the ESC. The horizontal and vertical extent of the remediation should be based on achievement of the PRGs. In lieu of site-specific ecological risk-based remediation goals, as per *NJDEP August 2011*, the higher of background or the ESC shall be used as remediation goals. Additionally, pursuant to N.J.A.C. 7:26E-5.1(e), if free and/or residual product is present, it must be treated or removed. Pursuant to N.J.A.C.7:26E-5.5, compliance with the ecological risk-based remediation goal must be demonstrated via post excavation sampling and analyses.

Without establishing clear numeric remediation goals, it is unclear whether contaminants are adequately delineated and whether the proposed sediment/soil excavation is protective of ecological receptors. For example, if contaminants will remain above PRGs/RMDs or the ESC, clean backfill may be needed in excavated areas of the lower portion of South Branch Creek and Northern Offsite Ditch in order to prevent contaminant exposure to ecological receptors.

If contamination above the selected clean up goals will remain, this must be identified and addressed. A figure that indicates any locations and elevated contaminant levels that will remain outside of the remedial footprint should be included with the revised FS.

50) Page 7-24 Third bullet, the upper temperature limit seems low. Surface temperatures of the site soil can reach 100 degrees F during the summer months.
51) Page 7-28, Section 7.5. – The detailed evaluation in this section should be performed in detail based on each evaluation criterion and also sub-criteria for all the alternatives. This section should follow that requirement.
52) Page 7-30 – Second paragraph ("approximately 57 pounds)" The report has not indicated how many total pounds of mercury are on the site. Please provide the number.
53) Page 7-31 – Third paragraph. "The soil components have an unlimited lifespan." This should read "soil cap components." Also a soil cap would be subject to erosion and tree growth if not maintained. In other words, a long term maintenance program would be required.
54) Page 7-40 Second para beginning with "However, given that…" EPA does not agree with this statement. Even though containment would be the first line of defense, treatment or off-site disposal would provide a second line of defense should the containment cell fail.
55) Page 7-42 – 4th bullet, Alt 4 and Alt 5 are more protective, long term than Alt 3 which is more protective than Alt 2.
56) Page 7-43, Reduction of T/M/V. The report should note that Alts 2 and 3 do not reduce TMV through treatment, while Alts 4 and 5 would.
57) Table 5-2. Mercuric Sulfide is not insoluble. I has a very low solubility in crystalline form, however when it first forms it probably exists in an amorphous compound, that crystallizes over time. In other words, metal sulfides formed in-situ are typically more soluble and less stable (e.g., subject to

oxidation). The Ksp value for mercuric sulfide should be provided (rather than “insoluble”) with a footnote indicating that the value is for the crystalline form.

58) Figure 2-5: Please indicate the depth at which visible mercury was present in soil samples.

59) Figure 7-4 should be in color.